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Intellectual Property Causes
1950 Roland Clarke Place
Reston, VA 20191
(703) 716-1191

10/16/2006

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X) PARTIAL ENGLISH LANGUAGE TRANSLATION OF THE ANSWER TO THE SEARCH REPORT

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| <input checked="" type="checkbox"/> Amendment <u>PRELIMINARY</u> | <input type="checkbox"/> Claim of Priority & Certified Copy of _____ |
| <input type="checkbox"/> Executed Assignment and cover letter | <input type="checkbox"/> Declaration <input type="checkbox"/> Executed |
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| Recording <input type="checkbox"/> | <input type="checkbox"/> Patent Application |
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| Extension <input type="checkbox"/> | <input type="checkbox"/> Reissue <input type="checkbox"/> Division |
| Publication <input type="checkbox"/> | <input type="checkbox"/> Continuation <input type="checkbox"/> Divisional |
| <input type="checkbox"/> Fee Transmittal | _____ pages (w/abstract) |
| <input type="checkbox"/> Maintenance Fee Payment | _____ claims _____ independent |
| <input type="checkbox"/> PTOL-85B Issue Fee & Publication Fee (with Copy) | _____ sheets of drawings |
| <input type="checkbox"/> Cover Letter Regarding Drawings | _____ figures |
| <input type="checkbox"/> Design Patent Application Transmittal | <input checked="" type="checkbox"/> I.D.S. form PTO-1449 & Documents <input type="checkbox"/> as attached |
| <input type="checkbox"/> Utility Patent Application Transmittal | <input checked="" type="checkbox"/> as listed on reverse |
| <input type="checkbox"/> Provisional Application Cover Sheet | <input type="checkbox"/> One self-addressed postcard |
| <input type="checkbox"/> Request for Continued Examination (RCE) including Submission | <input type="checkbox"/> Certification under 1.97(e) |
| <input checked="" type="checkbox"/> Cover Letter | <input type="checkbox"/> Certificate of Mailing (C-O-M) |
| <input type="checkbox"/> Credit Card Payment for \$ (Form PTO-2038) | <input type="checkbox"/> Returned Envelope |
| <input checked="" type="checkbox"/> Check No. 58987 for \$ 130.00 | <input checked="" type="checkbox"/> Literal English language translation of PCT/AT 2004/000356 including 11 pages of disclosure and 1 sheet of drawings |
| <input type="checkbox"/> Rule 53b and 53f Letter for Unexecuted Application | |
| <input type="checkbox"/> Application Data Sheet | |

the matter of : REAMER

applicant : Rolf CANTZ *et al.*

application No. : 10/575,873

patent No. :

Filed : 4/14/06



Issued :

Docket : P29396

RWM

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P29396

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371U.S. APPLICATION NO. (If known, see 37 CFR
1.5)

10/575,873

INTERNATIONAL APPLICATION NO.
PCT/AT2004/000356INTERNATIONAL FILING DATE
October 18, 2004PRIORITY DATE CLAIMED
October 16, 2003TITLE OF INVENTION
REAMERAPPLICANT(S) FOR DO/EO/US
Rolf CANTZ and Klaus VOIGT

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information.

1. ☐ This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.
2. ☒ This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This is an express request to promptly begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (23) indicated below.
4. ☐ The US has been elected (PCT Article 31).
5. ☐ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371 (c)(2)).
 - a. ☒ is attached hereto.
 - b. ☐ has been previously submitted under 35 U.S.C. 154 (d) (4).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

COPY

Items 11 to 22 below concern other document(s) or information included:

11. Assignee: BOEHLERIT GmbH & Co. KG of Kapfenberg, Austria
12. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
13. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
14. ☐ A FIRST preliminary amendment.
☐ A SECOND or SUBSEQUENT preliminary amendment.
15. ☐ An Application Data Sheet under 37 C.F.R. 1.76.
16. ☐ A substitute specification.
17. ☐ A power of attorney and/or change of address letter.
18. ☐ Figure of Drawing to be published:
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821-1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154 (d) (4).
21. ☐ A second copy of the English language translation of the international of the international application under 35 U.S.C. 154 (d) (4).
22. ☒ Other items or information:
Cover Letter

U.S. APPLICATION NO. (If known, CFR 1.5)		37	INTERNATIONAL APPLICATION NO.		ORNEY'S DOCKET NUMBER	
10/575,873			PCT/AT2004/000356		P29396	
23 <input type="checkbox"/> The following fees are submitted:				CALCULATIONS	PTO USE ONLY	
Basic national fee.....300.00				\$ 0.00		
24 <input type="checkbox"/> Examination Fee				\$ 0.00		
If International preliminary examination report prepared by USPTO and all claims satisfy provisions of PCT Article 33 (1)-(4).....100.00						
All other situations.....200.00						
25 <input type="checkbox"/> Search fee				\$ 0.00		
Search fee (37 CFR 1.445(a) (2)) has been paid on the international application to the USPTO as an International Searching Authority.....100.00						
International Search Report prepared and provided to the Office.....400.00						
All other situations.....500.00						
TOTAL 23, 24 and 25 =				\$ 0.00		
<input type="checkbox"/> Additional Fee for Specification and drawings filed in paper over 100 sheets (excluding sequence listing or computer program listing filed in electronic medium). The fee is \$250.00 for each additional 50 sheets of paper or fraction thereof.						
Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof (round up to a whole number)		RATE		
-100=	/50 =			x \$250.00	\$ 0.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than 30 months from the earliest claimed priority date (37 CFR 1.492(h)).				\$ 0.00		
Claims	Number Filed	Number Extra	Rate			
Total Claims	13 - 20 =	0	x \$50.00		\$ 0.00	
Independent Claims	1 - 3 =	0	x \$200.00		\$ 0.00	
Multiple Dependent Claim(s) (if applicable)			+ \$360.00		\$ 0.00	
TOTAL OF ABOVE CALCULATIONS =				\$ 0.00		
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$ 0.00		
SUBTOTAL =				\$ 0.00		
Processing fee of \$130.00 for furnishing the English translation later than 30 months from the earliest claimed priority date (37 CFR 1.492 (i)).				\$130.00		
Extension of Time fee in the amount of \$				\$ 0.00		
TOTAL NATIONAL FEE =				\$130.00		
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				\$ 0.00		
TOTAL FEES ENCLOSED =				\$130.00		
				Amount to be refunded	\$	
				Charged	\$	
a. <input checked="" type="checkbox"/> A check in the amount of \$130.00 to cover the above fees is included.						
b. <input type="checkbox"/> Please charge my Deposit Account No. 19-0089 in the amount of \$ to cover the above fees.						
c. <input checked="" type="checkbox"/> The U.S. Patent and Trademark Office is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 19-0089.						
d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.						
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.						
SEND ALL CORRESPONDENCE TO CUSTOMER NO. 07055 AT THE PRESENT ADDRESS OF:						
April 14, 2006 GREENBLUM & BERNSTEIN, P.L.C. 1950 Roland Clark Place Reston, VA 20191 (703) 716-1191				SIGNATURE		
				Neil F. Greenblum		
				NAME		
				28,394		
				REGISTRATION NUMBER		

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Rolf CANTZ et al.

Mail Stop PCT

Appl. No : 10/575,873

PCT Branch

(National Stage of PCT/AT2004/000356)

I. A. Filed : October 18, 2004

Confirmation No. 3909

For: REAMER

COVER LETTER

Mail Stop PCT

Commissioner for Patents
U.S. Patent and Trademark Office
Customer Service Window, Mail Stop PCT
Randolph Building
401 Dulany Street
Alexandria, VA 22314

 **COPY**

Sir:

In order to comply with the requirements for the submission of an English Language translation of the International Application as filed in the above-identified application, and prior to receipt of the Notification which should set a time limit for submission of materials, and further to the filing of the above-identified application and the filing fee on July 19, 2006, Applicant hereby submits:

- Transmittal Letter to the United States Designated/Elected Office Concerning a Filing Under 35 U.S.C. 371;
- an English Language translation of the International Application as filed;
- an Information Disclosure Statement, PTO form 1449 & references cited; and
- a check in the amount of \$130.00 to cover the late filing of the English Language Translation of the International Application as filed.

P29396.P08

The U.S. Patent and Trademark Office is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account No. 19-0089.

Should the Examiner have any questions, the Examiner is invited to contact the undersigned at the below-listed number.

Respectfully submitted,
Rolf CANTZ et al.

Neil F. Greenblum
Reg. No. 28,394

October 16, 2006
GREENBLUM & BERNSTEIN, P.L.C.
1950 Roland Clarke Place
Reston, VA 20191
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 **COPY!**



Reamer

The invention relates to a reamer according to the preamble to claim 1.

Reamers of this type have become known from EP 0558 811 B1, DE 43 29 553 C1 and DE 197 46 462 C1 and are used to produce precision-fitting bores with smoothed bore surface. They each have a base body that, in addition to a cutting element that is effective in machining terms and that is attached to the front, supports at least one guiding strip that extends with its longitudinal axis parallel to a rotational axis of the base body.

With regard to the surface quality and bore precision as well as the period of use of such reamers, a guiding strip is of particularly great importance. During a boring process, a guiding strip supports the base body in the bore and in this manner relieves a cutting element in terms of forces, which cutting element through the rotation of the base body and with a feed motion relative to a workpiece produces a chip removal on the same. During a rotational movement of the base body, the one guiding strip holds or, if necessary, several guiding strips hold thereby the cutting element relative to the worked workpiece on a desired travel circle, thus contributing to an exact guidance of the cutting element and to a high bore precision. At the same time the bore surface is effectively smoothed during the creation of a bore by friction with a guiding strip. It can therefore be said that a guiding strip performs smoothing and guiding functions.

A faultless performance of the above-mentioned functions of a guiding strip is also desirable in the case of a continuous use of reamers, as is frequently customary, e.g., in automobile production. In order to achieve the longest possible period of use of reamers under great stresses, special measures in working a workpiece or a use of alternative guiding strips were hitherto proposed.

With regard to special measures in working a workpiece with reamers, it is known to use cooling lubricants through which when using a reamer its guiding strips are to be kept at the lowest possible temperature in order to avoid welding onto the guiding strips chips removed or parts thereof. However, one problem is that cooling lubricants are difficult to insert into an area between the guiding surface

of a guiding strip and a workpiece; it is often impossible to achieve a cooling effect to the necessary extent.

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With regard to a use of alternative guiding strips, it has been proposed to provide guiding strips usually made of hard metal in addition with a coating, e.g., of diamond (EP 0 558 811 B1). The type of coating is thereby based on the material to be worked, which is why reamers with guiding strips with different coatings are used for working different materials. For example, according to DE 43 29 553 A1, reamers with guiding strips of hard metal which are coated with cubic boron nitride are to be used for working hardened steel alloys, whereas for working aluminum materials, diamond-coated guiding strips are considered suitable instead.

Another disadvantage of reamers with coated guiding strips is that the coatings have low strengths or thicknesses of only a few micrometers. A coating is therefore soon worn out with the use of a reamer. Best smoothing and guiding functions of a guiding strip and a high bore quality associated therewith can then no longer be guaranteed. Moreover, with a rotary motion of the reamer strong tangential forces occur during use which attack the coated guiding strips and essentially act in the direction of the hard metal/coating interface, which can cause the coating to flake off.

The latter factors in particular mean that with regard to working different materials not only are individual reamers necessary but also their practical period of use in working a single material is often inadequate.

The object of the invention is to disclose a reamer of the type mentioned at the outset, which reamer is suitable for processing different materials and has a long period of use.

This object is attained through a reamer according to claim 1.

The advantages obtained with the invention are to be seen in particular in that a reamer according to the invention is suitable for working workpieces of different materials. A composite construction of a guiding strip and a course according to

the invention of layered bodies results in a flat guiding surface that is composed of different materials. Each of these materials is particularly suitable for working a certain material, and a reamer according to the invention can be used in a correspondingly versatile manner. Since the layered bodies extend from an abutment surface to a guiding surface or vice versa, in addition the material areas effective for a smoothing of a bore surface are always available even with long-term use and wear possibly present in the area of the guiding surface. A smoothing function can thus be ensured long-term.

If a workpiece is worked with a reamer according to the invention, that part of the layered bodies of the material with the greatest wear resistance with respect to the material worked performs a smoothing of a bore surface. The remaining part of the layered bodies which is made of other materials consequently has a lower wear resistance with respect to the material worked and this part is preferably worn on the guiding surface side. Another important advantage is revealed here, for channels or troughs as it were are formed on a guiding surface through this different wear behavior, in which channels or troughs coolants can reach in an advantageously simple manner the most stressed contact surfaces between smoothing-active areas of the guiding strip and worked workpiece.

In a preferred embodiment of the invention the layered bodies run essentially parallel to the rotational axis of the base body. In this embodiment, one sequence of layered bodies of different materials is given over the entire length of a guiding strip, and bore surfaces can be smoothed with high quality over the entire length of the guiding strip. An effective cooling and, if necessary, lubrication can also be achieved over the entire length of a guiding strip.

A particularly advantageous embodiment of a reamer according to the invention is when the layered bodies run essentially perpendicular to the rotational direction of the base body. A tangential frictional force thus acts vertically on the layered bodies of the guiding strip during use of the reamer. Not only can a reciprocal detachment of the same or peeling off of individual layered bodies be

completely avoided, but the individual layered bodies are pressed together by a tangential force.

It has proven to be particularly favorable when the guiding strip has layered bodies of hard metal and layered bodies of diamond or cubic boron nitride. In this case both softer metals such as aluminum and harder metals such as hardened steel alloys can be advantageously worked with a reamer. In working softer materials, a diamond layered body causes a smoothing of a bore and a guiding of the reamer, whereas a hard metal layered body supports the smoothing-active diamond layer. It is also important that a cooling lubricant channel is formed on the free surface of the hard metal layered body/bodies in the area of the guiding surface. If harder materials such as steels are worked, it is the other way around: hard metal layered bodies cause a smoothing and diamond layered bodies perform a support function or cooling lubricant channels are formed in the guiding surface area of the same.

Within the scope of more extensive tests, it has proven to be advantageous for working different materials if a guiding strip comprises layered bodies of hard metal with a thickness of 1000 μm to 1500 μm . Thicknesses of at least 1000 μm prove to be favorable with respect to a smoothing when working steel. Thicknesses greater than 1500 μm can result in a quicker wear of the guiding strip when working workpieces of aluminum alloys or in a shorter period of use of the reamer.

In the tests mentioned above, it also proved to be advantageous if the guiding strip comprises layered bodies of diamond or cubic boron nitride with a thickness of 2 μm to 500 μm , in particular 10 μm to 50 μm , because then both aluminum alloys and steel alloys can be worked with favorable wear behavior of a guiding strip and long period of use of the reamer.

It is advantageous if at least one layered body is made of hard metal and is connected to a layered body of diamond, because a direct connection of layered bodies of hard metal and layered bodies of diamond has a favorable impact on the durability of the composite structure or the durability of the layered body bond

of the guiding strip. It has proven to be particularly expedient in this connection if the layered body of diamond is produced by deposition of diamond on the layered body of hard metal. In this manner a direct connection of smoothing-active layered bodies can be achieved by adhesive force, which connection can withstand particularly high stresses, rendering it possible to provide reamers with a particularly long period of use.

Such an embodiment variant of a reamer is simple to produce. It is necessary merely to coat with diamond on both sides hard metal layered bodies with dimensions according to a guiding strip to be produced, thus producing individual components. Subsequently, the coated individual components can be connected to one another in the areas of the free surfaces of the diamond coatings, whereby preferably a first solder mass is used.

Specifically, a solder mass has proven useful for this which contains copper and silver as main constituents and titanium and/or yttrium as further elements. In a connection of diamond layered bodies by a solder mass, this ultimately also forms a layered body which should preferably have a thickness of 10 μm to 25 μm . A bond of diamond layers or a connecting effect by the solder mass can be impaired with thicknesses less than 10 μm . Thicknesses greater than 25 μm should be avoided because the metallic solder mass is heated with a reamer use and thus an increased cooling is necessary. Thicknesses greater than 25 μm do not have a positive effect on a bond of diamond layers either.

An attachment of the guiding strip to the base body is expediently made by a second solder mass which has a lower melting point than a first solder mass.

In the event of a wear of a guiding strip, a quick replacement of the same can be achieved in particular when it is connected to the base body by an adhesive mass.

The invention is described in more detail below on the basis of exemplary figures.

They show:



Fig. 1 A diagrammatic representation of a cross section through a reamer according to the invention, the cross section running perpendicular to the rotational axis,

Fig. 2 A guiding strip,

Fig. 3 A cross section through a guiding strip after one use.

Fig. 1 shows a diagrammatic cross section through a front area of a reamer R according to the invention. A base body 1 with an axis A supports a cutting element 2 which is soldered or adhered to the base body 1 or can be attached in another manner, e.g., by means of a clamping screw. Furthermore, two guiding strips 3, 3' are attached to the base body 1, which guiding strips extend parallel to axis A with respect to their longitudinal axes and are positively accepted by shaped seats of the base body 1. Guiding strips 3, 3' can be connected to the base body 1 by adhesive force with an adhesive or solder mass.

The guiding strips 3, 3' are placed after the cutting element 2 in the rotational direction D at angles of approx. 45° or 180° and comprise respectively layered bodies 41, 42 connected to one another in a flat manner and running from an abutment surface 31 to a guiding surface 32. Furthermore, the individual layered bodies 41, 42 have a course parallel to axis A and to the rotational direction D of the base body 1.

A reamer R shown in Fig. 1 with layered bodies 41, 42 of the guiding strips 3 running accordingly is characterized by a particularly high resistance to acting tangential forces. Whereas with coated guiding strips the coating can be detached with a rotational movement in the bore B in the direction D due to the forces thus acting parallel to a guiding surface, the guiding strips 3, 3' of reamers according to the invention can now easily absorb these forces due to a perpendicular position of the layered bodies 41, 42.

Fig. 2 shows an embodiment of the guiding strip 3 of a reamer according to the invention in greater detail. The guiding strip 3 comprises a plurality of layered bodies 43, 44, 45 lying parallel to one another, which layered bodies run from an

abutment surface 31 towards a guiding surface 32 and extend over the entire length of the guiding strip 3.

A guiding strip 3 that is particularly easy to produce and is shown in Fig. 2 can be such that a layered body 43a of hard metal forming a first lateral surface is connected over the whole area to a layered body 44 of diamond. This is connected to a sequence of layered bodies 45, 44, 43b, 44, 45 or in the order of the corresponding materials solder mass – diamond – hard metal – diamond – solder mass. Such a layered body series can be provided once or several times as required. Finally a layered body 44 of diamond and a layered body 43a of hard metal forming the second lateral surface follow again towards the second lateral surface.

A production of a guiding strip shown in Fig. 2 can be carried out simply in that individual layered bodies 43a and 43b, respectively formed of hard metal are provided with dimensions that correspond to the guiding strip to be produced. Subsequently layered bodies 43a are coated with diamond on one side and layered bodies 43b are coated with diamond on both sides. The components thus produced are then assembled to form a guiding strip 3 by connecting the layered bodies 44 of diamond with a solder mass by adhesive force and forming layered bodies 45 of solder mass.

Fig. 3 shows a shaping of a guiding surface 32 with wear of a first part of layered bodies 44, made of, e.g., hard metal, and layered bodies 43 not worn and made of, e.g., diamond. The guiding surface 32 shows on the one hand in the area of the layered bodies 43 idealized flat areas 32a through which surface areas 32a during use a smoothing of a bore surface and a guiding of the reamer R in a bore are caused. In the area of layered bodies 44, which comprise hard metal wearing more quickly when working aluminum, arched areas 32b are present, so that channels or troughs are formed in which cooling lubricant can be transported to smoothing-active flat areas 32a.

A shaping of a guiding surface shown in Fig. 3 could be observed in working workpieces of aluminum. If a guiding strip 3 in a condition as shown in Fig. 3 is

used for working workpieces of steel, an essentially flat guiding surface 32a is reached again as it were through wear in a self-grinding manner. Consequently, in a reversal of the effect observed in working aluminum, guiding surface areas of hard metal take on a smoothing of the bore and guiding of the reamer and a cooling lubricant transport can occur in the area of the diamond layered bodies.

Claims

1. Reamer comprising a base body with a cutting element and at least one guiding strip aligned essentially axially with an abutment surface and a guiding surface, whereby the guiding surface is connected to the base body in the area of the abutment surface, characterized in that the guiding strip is formed of layered bodies of different materials running from the guiding surface to the abutment surface.
2. Reamer according to claim 1, characterized in that the layered bodies run essentially parallel to the rotational axis of the base body.
3. Reamer according to claim 1 or 2, characterized in that the layered bodies run essentially perpendicular to the rotational direction of the base body.
4. Reamer according to one of claims 1 through 3, characterized in that the guiding strip has layered bodies of hard metal and layered bodies of diamond or cubic boron nitride.
5. Reamer according to one of claims 1 through 4, characterized in that the guiding strip comprises layered bodies of hard metal with a thickness of 1000 μm to 1500 μm .
6. Reamer according to one of claims 1 through 5, characterized in that the guiding strip comprises layered bodies of diamond or cubic boron nitride with a thickness of 2 μm to 500 μm , in particular 10 μm to 50 μm .
7. Reamer according to one of claims 1 through 6, characterized in that at least one layered body is made of hard metal and is connected to a layered body of diamond.
8. Reamer according to claim 7, characterized in that the layered body of diamond is made through deposition of diamond on the layered body of hard metal.
9. Reamer according to claim 7 or 8, characterized in that the guiding strip has layered bodies of diamond which are connected with a first solder mass.

10. Reamer according to claim 9, characterized in that the first solder mass contains copper and silver as main constituents and titanium and/or yttrium as further elements.
11. Reamer according to claim 9 or 10, characterized in that the layered body/bodies formed through the first solder mass has/have a thickness of 10 μm to 25 μm .
12. Reamer according to one of claims 9 through 11, characterized in that the guiding strip is connected to the base body by a second solder mass which has a lower melting point than a first solder mass.
13. Reamer according to one of claims 1 through 11, characterized in that the guiding strip is connected to the base body by an adhesive mass.



Abstract

The invention relates to a reamer R comprising a base body (1) with a cutting element (2) and at least one guiding strip (3) aligned essentially axially with an abutment surface (31) and a guiding surface (32), whereby the guiding strip (3) is connected to the base body (1) in the area of the abutment surface (31). In order to be able to work different materials with a single reamer R over a long period of use of the reamer R, it is proposed according to the invention that the guiding strip (3) is formed of layered bodies (41, 42) with different materials running from the guiding surface (32) to the abutment surface (31).

1/1

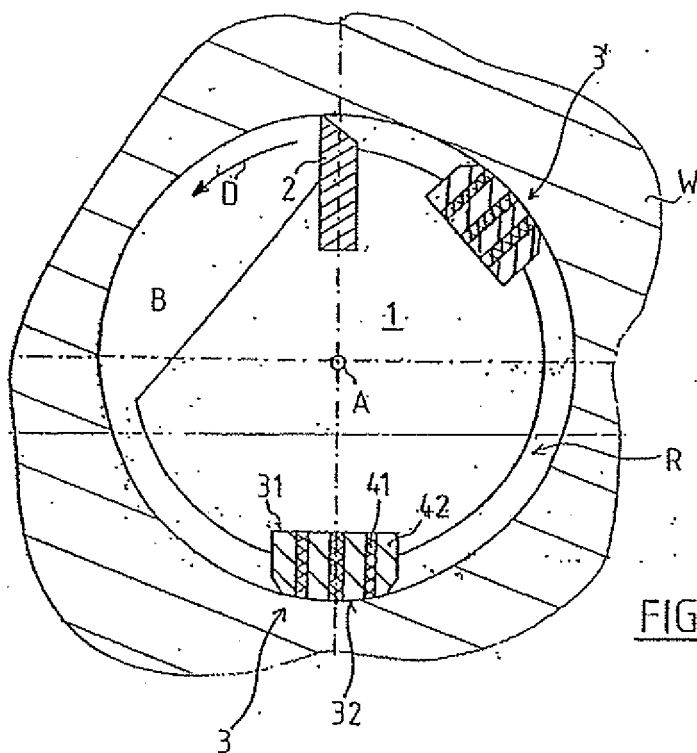


FIG. 1

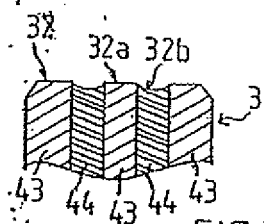


FIG. 3

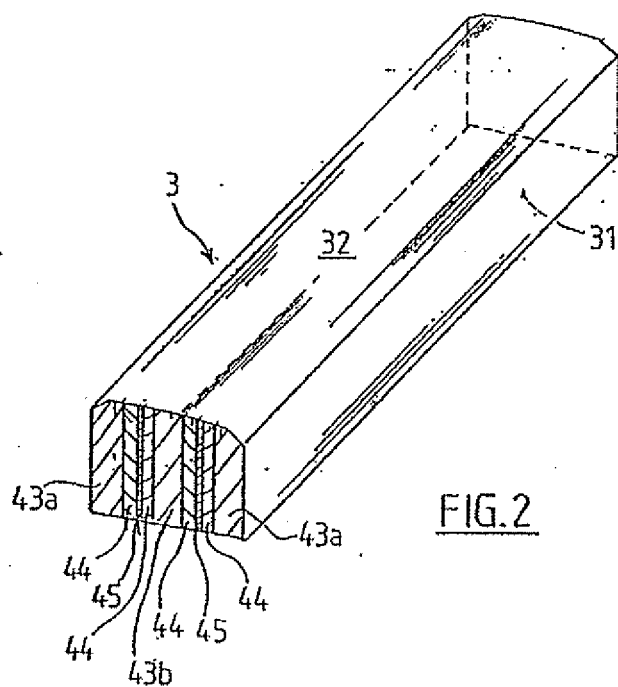


FIG. 2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Rolf CANTZ et al.

Group Art Unit: Not yet assigned

Appln. No. : 10/575,873

Examiner: Not yet assigned

I.A. Filed : October 18, 2004

For : REAMER

PRELIMINARY AMENDMENT

Commissioner for Patents
U.S. Patent and Trademark Office
Customer Service Window, Mail Stop PCT
Randolph Building
401 Dulany Street
Alexandria, VA 22314

 **COPY**

Sir:

Prior to an examination of the above-identified patent application, the Examiner is respectfully requested to amend the claims as follows:

Amendments to the Claims begin on page 2 of this Preliminary Amendment.

Remarks begin on page 4 of this Preliminary Amendment.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

- 1- (Original) Reamer comprising a base body with a cutting element and at least one guiding strip aligned essentially axially with an abutment surface and a guiding surface, whereby the guiding surface is connected to the base body in the area of the abutment surface, characterized in that the guiding strip is formed of layered bodies of different materials running from the guiding surface to the abutment surface.
- 2- (Original) Reamer according to claim 1, characterized in that the layered bodies run essentially parallel to the rotational axis of the base body.
- 3- (Currently Amended) Reamer according to claim 1 ~~or 2~~, characterized in that the layered bodies run essentially perpendicular to the rotational direction of the base body.
- 4- (Currently Amended) Reamer according to ~~one of claims 1 through 3~~ claim 1, characterized in that the guiding strip has layered bodies of hard metal and layered bodies of diamond or cubic boron nitride.
- 5- (Currently Amended) Reamer according to ~~one of claims 1 through 4~~ claim 1, characterized in that the guiding strip comprises layered bodies of hard metal with a thickness of 1000 µm to 1500 µm.
- 6- (Currently Amended) Reamer according to ~~one of claims 1 through 5~~ claim 1, characterized in that the guiding strip comprises layered bodies of diamond or

cubic boron nitride with a thickness of 2 μm to 500 μm , in particular 10 μm to 50 μm .

7- (Currently Amended) Reamer according to ~~one of claims 1 through 6~~ claim 1, characterized in that at least one layered body is made of hard metal and is connected to a layered body of diamond.

8- (Original) Reamer according to claim 7, characterized in that the layered body of diamond is made through deposition of diamond on the layered body of hard metal.

9- (Currently Amended) Reamer according to claim 7 ~~or 8~~, characterized in that the guiding strip has layered bodies of diamond which are connected with a first solder mass.

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10- (Original) Reamer according to claim 9, characterized in that the first solder mass contains copper and silver as main constituents and titanium and/or yttrium as further elements.

11- (Currently Amended) Reamer according to claim 9 ~~or 10~~, characterized in that the layered body/bodies formed through the first solder mass has/have a thickness of 10 μm to 25 μm .

12- (Currently Amended) Reamer according to ~~one of claims 9 through 11~~ claim 9, characterized in that the guiding strip is connected to the base body by a second solder mass which has a lower melting point than a first solder mass.

13- (Currently Amended) Reamer according to ~~one of claims 1 through 11~~ claim 1, characterized in that the guiding strip is connected to the base body by an adhesive mass.

REMARKS

The Examiner is respectfully requested to enter the foregoing amendment prior to examination of the above-identified patent application.

Applicants note that the instant amendment has been prepared to remove multiply dependent claims in order to reduce governmental filing fees and to present the claims in better form for U.S. patent prosecution. Thus, Applicants submit that the instant amendment has not been made for any reasons related to patentability such that no estoppel should be deemed to attach.

Should there be any questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

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Respectfully submitted,
Rolf CANTZ et al.

Neil F. Greenblum
Reg. No. 28,394

September 14, 2006
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Rolf CANTZ et al.

Group Art Unit: Not yet assigned

Appln. No. : 10/575,873

Examiner: Not yet assigned

I.A. Filed : October 18, 2004

For : REAMER

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
U.S. Patent and Trademark Office
Customer Service Window, Mail Stop PCT
Randolph Building
401 Dulany Street
Alexandria, VA 22314

COPY

Sir:

In accordance with the duty of disclosure under 37 C.F.R. Sections 1.56, 1.97, and 1.98, Applicants hereby submit the following documents for the Examiner's consideration.

(1) European Patent Application No. 0 558 811 published September 8, 1993, which is discussed in the literal translation of the instant application beginning in the first paragraph;

(2) German Patent Application No. 43 29 553 published March 9, 1995, which is discussed in the literal translation of the instant application beginning in the first paragraph;

(3) German Patent Application No. 197 46 462 published October 21, 1997, which is discussed in the literal translation of the instant application beginning in the first paragraph;

The following documents were cited in a Search Report conducted in International Patent Application No. PCT/AT2004/000356, which is a counterpart of the above-captioned application. Applicants note that a copy of the Search Report has been previously forwarded to the Examiner on April 14, 2006, therefore, a copy will not be enclosed. For the convenience of the Examiner, Applicants submit herewith a partial English language translation of the Annex to the Search Report. In particular, the International Examiner cited:

(4) Item (1). Moreover, for the Examiner's convenience, Applicants note U.S. Patent No. 5,532,830 issued July 12, 1994 to KRESS et al., which is identified by the Annex to the Search Report as a U.S. patent family member of the above-cited European Patent Application;

(5) International Publication No. WO 98/39127 published September 11, 1998. Moreover, for the Examiner's convenience, Applicants note U.S. Patent No. 6,254,319 issued July 3, 2001 to MAIER et al., which is identified by the Annex to the Search Report as a U.S. patent family member of the above-cited International Publication;

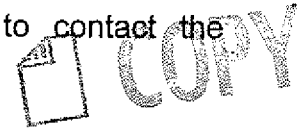
(6) U.S. Patent No. 5,551,812 issued September 3, 1996 to BASTECK;

(7) Item (3); and

(8) European Patent Application No. 0 713 747 published May 29, 1996.

Documents (1) through (3), (5), (6) and (8) are listed on the enclosed completed copy of the PTO-1449 Form. Accordingly, the Examiner is requested to consider these documents and to indicate such consideration by returning a signed and initialed copy of the PTO-1449 Form with the first official communication.

Moreover, copies of the cited non-U.S. patent documents are being submitted herewith. However, pursuant to the U.S. Patent and Trademark Office's decision to waive the requirement under 37 C.F.R. 1.98 (a)(2)(i), copies of the cited/listed U.S. patents and U.S. published patent applications are not enclosed herewith. Moreover, if any copies are needed, the Examiner is respectfully requested to contact the undersigned.



Applicants note that while this Information Disclosure Statement is being filed more than three months from the filing date, Applicants have not received a first action on the merits from the U.S. Patent and Trademark Office. Accordingly, consideration of the enclosed document is required under 37 C.F.R. 1.97(b)(3).

However, if the first action on the merit has been mailed prior to the filing date of this Information Disclosure Statement, Applicants hereby authorize the Commissioner to charge any fees necessary to ensure consideration of the documents cited herein to Deposit Account No. 19-0089.

Should there be any questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
Rolf CANTZ et al.

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FORM PTO-1449

U.S. Department of Commerce
Patent and Trademark OfficeAtty. Docket No.
P29396Application No.
10/575,873INFORMATION DISCLOSURE STATEMENT
BY APPLICANT

(Use several sheets if necessary)

Applicant
Rolf CANTZ et al.I.A. Filing Date
October 18, 2004Group
Not Yet Assigned

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
		6 2 5 4 3 1 9	07/03/01	MAIER et al..			
		5 5 5 1 8 1 2	09/03/96	BASTECK			

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO
		0 5 5 8 8 1 1	09/08/93	E.P.O.			
		4 3 2 9 5 5 3	03/09/95	GERMANY			
	1	9 7 4 6 4 6 2	10/21/97	GERMANY			
	9	8 / 3 9 1 2 7	09/11/98	W.I.P.O.			
		0 7 1 3 7 4 7	05/29/96	E.P.O.			

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER

DATE CONSIDERED

*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.